Abstract

Spatial navigation, cognitive coordination and behavioral flexibility belong amongst cognitive functions, which play a role in many neuropsychiatric disorders. Behavioral tasks have proved to be useful paradigms to test these functions in pharmacological or genetic animal models. First aim was to determine a potential interaction between β-adrenergic and α_1-adrenergic or D_2-dopaminergic systems. Spatial navigation and coordination were impaired in both studies during co-aplication of subthreshold doses of drugs. Used substances belong to group of widely prescribed drugs, thus our results could be implicated in clinical practice.

Another study examined an acute effect of MK-801 (animal model of schizophrenia) on behavioral flexibility in Carousel maze and the Morris water maze (MWM). Carousel maze showed higher sensitivity with impairments from 0.08 mg.kg^{-1} compared to 0.10 mg.kg^{-1} in MWM. The final experiment aimed at testing the effect of reduced expression of Nogo-A protein on spatial navigation and behavioral flexibility of rats. A battery of tests in the Carousel maze revealed impairment in cognitive functions, MWM showed unaffected working memory of rats. Our results support the hypothesis linking Nogo-A *knock-down* rats with neuropsychiatric symptoms and cognitive disorders.

Key words: spatial navigation, behavioral flexibility, adrenalin, dopamine, interaction, MK-801, Nogo-A, schizophrenia